

COMMONWEALTH of AUSTRALIA
PATENTS ACT 1952
APPLICATION FOR A STANDARD PATENT

&
We

MARCO ENGINEERING PTY LTD
a company incorporated in the State of New South Wales,
of
Lot 3, Royalla Road,
QUEANBEYAN, N.S.W. 2620.

hereby apply for the grant of a Standard Patent for an invention entitled:

"POSITION ADJUSTMENT ARRANGEMENT"

which is described in the accompanying ^{provisional} specification.
~~complete~~

Details of basic application(s):—

Number

Convention Country

Date

AUSTRALIAN
ONB

18 SEP 1987

PATENT OFFICE

The address for service is care of DAVIES & COLLISON, Patent Attorneys.

1 Little Collins Street, Melbourne 3000, Australia

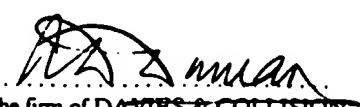
Dated this

18th

day of September

19 87

To: THE COMMISSIONER OF PATENTS


(a member of the firm of DAVIES & COLLISON
for and on behalf of the Applicant).

Davies & Collison, Melbourne and Canberra.

COMMONWEALTH OF AUSTRALIA

PATENTS ACT 1952

DECLARATION IN SUPPORT OF CONVENTION OR
NON-CONVENTION APPLICATION FOR A PATENT

Insert title of invention

In support of the Application made for a patent for an invention
entitled "POSITION ADJUSTMENT ARRANGEMENT"

Insert full name(s) and address(es)
of declarant(s) being the appli-
cant(s) or person(s) authorized to
sign on behalf of an applicant
company

I MARCO BOZ, Managing Director of Marco
Engineering Pty Ltd, a company incorporated
in the State of New South Wales, of
Lot 3, Royalla Road, Queanbeyan, New
South Wales 2620, Commonwealth of Australia

Cross out whichever of paragraphs
1(a) or 1(b) does not apply

1(a) relates to application made
by individual(s)
1(b) relates to application made
by company. insert name of
applicant company

do solemnly and sincerely declare as follows

1 (a) ~~I am~~ the applicant ~~for the patent~~
~~We are~~

or (b) I am authorized by MARCO ENGINEERING PTY LTD

Cross out whichever of paragraphs
2(a) or 2(b) does not apply

2(a) relates to application made
by inventor(s)
2(b) relates to application made
by company(s) or person(s) who
are not inventor(s). insert full
name(s) and address(es) of inven-
tor(s).

the applicant for the patent to make this declaration on its behalf.

2 (a) I am the actual inventor of the invention
~~We are~~

or (b)

~~to~~ the actual inventor of the invention and the facts upon which the applicant
~~are~~ is entitled to make the application are as follows :-
~~are~~

State manner in which applicant(s)
derive title from inventor(s)

The applicant would, if a patent were granted upon
application made by the inventor, be entitled to
have a patent assigned to it.

Cross out paragraphs 3 and 4
for non-convention applications.
For convention applications,
insert basic country(s) followed
by date(s) and basic applicant(s).

~~1 The basic application as defined by Section 141 of the Act was made
in on the
by
in on the
by
in on the
by~~

~~4 The basic application referred to in paragraph 3 of this Declaration was
the first application made in a Convention country in respect of the invention the subject
of the application~~

Insert place and date of signature

Declared at QUEANBEYAN this 29TH - 8 - 1988

Signature of declarant(s) (no
attestation required)

MARCO BOZ

Note Initial all alterations

(12) PATENT ABSTRACT**(11) Document No. AU-A-21786/88****(19) AUSTRALIAN PATENT OFFICE**

(54) Title
POSITION ADJUSTMENT ARRANGEMENT

(51)⁴ International Patent Classification(s)
A47B 017/06

(21) Application No. : **21786/82**

(22) Application Date : **18.09.87**

(23) Filing Date of Complete Specification : **02.09.88**

(43) Publication Date : **23.3.89**

(60) Related to Provisional(s) : **PI4426**

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(57) Claim

1. An adjustment assembly for use with a horizontal platform, said assembly comprising
 - (a) a bracket adapted to be mounted underneath the platform, said bracket having a planar side arm which extends vertically below the platform;
 - (b) a planar plate adapted to be fixedly mounted substantially coplanar with the bracket side arm;
 - (c) a pair of rigid, generally elongate connecting straps, each connecting strap being pivotally connected at or near one end thereof to the bracket side arm and being pivotally connected at or near the other end thereof to the planar plate, the elongate directions of the connecting straps being parallel;
 - (d) a pin support arrangement connected to the assembly, the pin support arrangement including a pin which (i) is adapted to be inserted within one of a series of apertures in the planar plate when the platform is locked in a selected location and (ii) is adapted to be retracted from

within said one aperture when the platform is to be moved to a different location; and
(e) means to move said pin from its position inserted into said one aperture to its retracted position.

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PATENTS ACT 1952-1962

COMPLETE SPECIFICATION

(Original)

FOR OFFICE USE:

Class Int. Class

Application Number:
Lodged:Complete Specification Lodged:
Accepted:
Published:

Priority:

Related Art:

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Complete Specification for the invention entitled:

"POSITION ADJUSTMENT ARRANGEMENT"

The following statement is a full description of this invention,
including the best method of performing it known to us :-

153 02/09/88

- 1 -

Field of the Invention

This invention concerns adjustable platforms. The invention was designed specifically to enable a keyboard support platform to be readily and easily
5 re-positioned to suit the requirements of an operator of the keyboard, and in view of this intended use of the invention, its application to this use will be described in this specification. However, the invention is not restricted to adjustable platforms
10 for this particular purpose.

Technical Background

The problem of repetitive strain injury (RSI) occurring to keyboard operators (particularly typists and data processing operators) is well known. It is
15 also well known that the likelihood of RSI occurring is minimised if the keyboard and other equipment used by the keyboard operator is correctly positioned so that the operator works without continuous or repeated straining of the muscles used when operating
20 the keyboard. Unfortunately, there is no standard position for a keyboard that will suit all operators. Many currently available keyboard support platforms and tables are not adjustable in height. And if the support platform is height adjustable, in most cases
25 the adjustment process is awkward, difficult and/or time-consuming. Consequently, most keyboard operators fail to adjust the position of their keyboards so that they are correctly situated and the operators continue to work with their keyboards in a
30 position that is not ideal. In this way the risk of

suffering from RSI is increased. The few keyboard support platforms that are easily adjusted are generally very expensive.

Disclosure of the Present Invention

5 It is an object of the present invention to provide an adjustment arrangement that is relatively inexpensive to produce and that permits a keyboard support platform - or other platform - to be easily positioned within a range of possible locations, and
10 to be positively secured in the selected location.

This objective is achieved by providing the platform with a pair of brackets which support the platform, with each bracket having a bracket arm that extends below the platform. Each bracket arm is connected
15 by a pair of rigid parallel connecting straps to a planar plate, that is substantially coplanar with its associated bracket arm. Each strap is pivotally connected at its ends to, respectively, its associated bracket arm and its associated planar
20 plate. The planar plates are affixed to a frame or other rigid supporting member. One of the planar plates has a series of apertures in it, through which a pin, carried by a pin supporting member or arrangement which is mounted either on the associated
25 bracket or on one of the associated connecting straps, can project to lock the platform at a required height setting. When the pin is retracted from within the aperture in the planar plate, the platform may be moved to a different height, at which

it can be locked if the pin is located to be inserted into a different one of the apertures in the planar plate.

Thus, according to the present invention, there is
5 provided an adjustment assembly for use in with a horizontal platform, said assembly comprising

- (a) a bracket adapted to be mounted underneath the platform, said bracket having a planar side arm which extends vertically below the platform;
- 10 (b) a planar plate adapted to be fixedly mounted substantially coplanar with the bracket side arm;
- (c) a pair of rigid, generally elongate, connecting straps, each connecting strap being pivotally
15 connected at or near one end thereof to the bracket side arm and being pivotally connected at or near the other end thereof to the planar plate, the elongate directions of the connecting straps being parallel;
- 20 (d) a pin support arrangement connected to the assembly, the pin support arrangement including a pin which (i) is adapted to be inserted within one of a series of apertures in the planar plate when the platform is locked in a selected
25 location and (ii) is adapted to be retracted from within said one aperture when the platform is to be moved to a different location; and

(e) means to move said pin from its position inserted into said one aperture to its retracted position.

Normally the pin support arrangement will include an
5 arrangement whereby the pin is biased into the position where it is inserted into one of the series of apertures in the planar plate. As noted above, the pin support assembly may be mounted on the bracket (in which case it will be mounted on the
10 bracket side arm) or on one of the connecting straps.

Preferably, one of the connecting straps will be connected by a tension spring to a lug on the planar plate, to provide at least partial support for the platform while it is being moved from one height
15 setting to a new height setting.

The present invention also encompasses an adjustable height platform which is supported at or near one of its sides by an adjustment assembly as defined above, and is supported at or near its other side by a
20 second bracket and a second planar plate, connected by a second pair of connecting straps. The second bracket, planar plate and pair of connecting straps will have the same dimensions as the corresponding components of the adjustment assembly, but need not
25 have the pin support arrangement of the adjustment assembly (in which case there will be no need for a corresponding series of apertures in the second

planar plate). However, if required, the adjustable height platform may be supported at or near each side by an adjustment assembly as defined above.

Embodiments of the present invention will now be described, with reference to the accompanying drawings.

Brief Description Of The Drawings

Figure 1 is a partly schematic perspective sketch of one realisation of the adjustment assembly of the present invention, with the platform (which is required to occupy a series of height settings) removed for the sake of clarity.

Figure 2 is a view from one side of the adjustment assembly of Figure 1.

Figure 3 is a sectional view at 3-3 of the adjustment assembly of Figure 1.

Figure 4 is an exploded diagram which illustrates the construction of a typical pin support arrangement for use in the embodiment of Figure 1.

Figure 5 illustrates the construction of a control lever or trigger arrangement for use with the pin support system of Figure 4.

Figure 6 is a perspective view, from one side and below, of a second embodiment of the present invention.

Figure 7 is a perspective view (also from one side and below) showing that side of the embodiment of Figure 6 which is not shown in Figure 6.

Figure 8 is a partially exploded view from above of the embodiment of Figures 6 and 7.

Figure 9 is a perspective sketch, similar to Figure 10 7, of a bracket assembly that may be used on the edge of a platform which is not supported by the embodiment of Figures 6, 7 and 8.

Detailed Description of the Illustrated Embodiment

In the arrangement illustrated in Figure 1, a planar 15 plate 11 is affixed by conventional means to a frame 10. A shelf, platform or table member 19 will normally be mounted on the frame 10 so that it extends over the planar plate 11. This shelf, platform or table member 19 has been omitted from 20 Figure 1 of the drawings to enable this embodiment of the mechanism of the present invention to be better illustrated.

A keyboard support table 12, a portion only of which is shown in dashed outline in Figure 1, is supported 25 on a pair of brackets 60, one at each side of the table 12. The bracket 60 shown in Figure 1 has a

side arm 13 which extends substantially vertically below the table 12 and is positioned to be coplanar with the plate 11.

The side arm 13 is connected to the plate 11 by a first rigid strap 14 and a second rigid strap 15. The straps 14 and 15 are each adapted to pivot about respective pivot axes 16 and 17 (see also Figures 2 and 3).

A locating pin assembly is mounted on the hinge member 14. This locating pin assembly is shown in more detail in Figure 4. In Figure 1, a housing 18 encloses a pin supporting body onto which the outer sheath 20 of a Bowden cable (or the like) is secured. The Bowden cable extends from a locating pin 21 (not shown in Figure 1, but featured in the other drawings) to a lever 23 of a trigger assembly 22 which is mounted away from the planar plate 11.

The planar plate 11 contains an arcuate array of apertures 24, so positioned that when the strap 14 is appropriately positioned by rotating it about its pivot axis 17, the locating pin 21 may be engaged with one of the apertures 24. When the lever 23 of the assembly 22 is moved away from its rest position, the locating pin 21 is moved out of the aperture 24 in the plate 11 in which it has been engaged, thus permitting the bracket 60 and its side arm 13 (and with it the supporting table 12) to be raised or lowered relative to the top of the plate 11. Release

of the lever 23 enables the locating pin to be engaged again with one of the apertures 24, thus preventing further movement of the side arm 13 relative to the plate 11.

5 A tension spring 25, extending between a first lug 26 which is mounted on the plate 11 and a second lug 27 which is mounted on the second strap 15, provides at least partial support for the platform or table 12, and any keyboard or other item that may be placed on
10 it.

In a normal keyboard station, the plate 11, the bracket 60 with its side arm 13, the straps 14 and 15, and the tension spring 25 will have corresponding components at the other (not illustrated) end of the
15 keyboard support platform 12. However, the apertures 24 and the locating pin 21 with its control system need not be duplicated; a single assembly as illustrated is adequate for most applications of the present invention.

20 In the locating pin assembly shown in Figure 4, the locating pin 21 moves within a cylindrical channel 40 in the pin support body 41. A Bowden cable 30 or the like, having an outer sheath 20 which is connected to the narrow end portion 42 of the channel 40, is
25 attached to the pin 21. The position of the pin 21 within the channel 40 is controlled by (i) the cable 30 and a compression spring 43, which also fits into

the channel 40, and (ii) a flange 45 which acts as a stop for movement under the bias action of the spring 43.

Figure 5 shows how a simple mechanical arrangement 5 may be used to control the movement of the Bowden cable 30. The lever 23 is pivoted about a pivot axle 51 which is supported by the sides of a housing 46. The end of the Bowden cable 30 which is remote from the pin 21 is connected to the end of the lever 23 10 which is located within the housing 46. The corresponding end of the sheath 20 of the Bowden cable is secured to an inlet point 52 of the housing 46. Thus movement of the lever 23 in the direction of arrow A in Figure 5 moves the cable 30 to pull the 15 end of the locating pin 21 out of the aperture 24 in which it has been engaged.

It has been found that with the illustrated arrangement, it is a simple operation to disengage the locating pin from the apertures in the plate 11, 20 re-position a keyboard support platform, then allow the locating pin (under the bias provided by the compression spring 43) to re-engage with the appropriate one of the apertures 24. However, a more preferred form of the present invention has been 25 developed. This more preferred embodiment is illustrated in Figures 6 to 9.

In Figures 6 to 9, components which are the same as components shown in Figures 1 to 5 have been given the same reference numbers.

Referring now to Figures 6 and 7, a keyboard support table (or other form of table) 12 is mounted on a pair of brackets 60 (only one bracket 60 is shown in Figure 6, the other bracket 60 is shown in Figure 9). Each bracket 60 has a side arm 13 which extends vertically below the table 12 and is coplanar with a respective planar plate 11, which is mounted rigidly on a frame 10. Each planar plate 11 is connected to its associated bracket side arm 13 by a pair of rigid, elongate straps 14 and 15, which pivot about respective pivot axes 16 and 17. A tension spring 25 extending between lugs 26 and 27 (mounted, respectively, on the planar plate 11 and the lower strap 15) provides at least partial support for the table 12 when a locating pin 21 is removed from that aperture (being one of a series of apertures 24 in an arcuate array in the planar plate 11) in which it has been positioned to locate and support the table 12 at a predetermined height.

As shown particularly in Figures 6 and 8, the locating pin 21 extends from a pin support bar 62 which is pivotally mounted on an axle 63 which extends between a pair of side arms 64. The side arms 64 are part of a generally U-shaped member 65 which is mounted rigidly on the bracket side arm 13 shown in Figure 6. An extension 66 from the pin

support bar 62 provides a handle for manual movement, about the pivot axle 63, of the pin support bar. In the absence of manual movement of the extension 66, a tension spring 67 or a compression spring 68 (these 5 are alternatives, although both are shown in Figure 8) biases the support bar 62 so that the pin 21 will be located within one of the apertures 24 in the plate 11.

To assist in ensuring that movement of the bracket 60 10 is such that the pin 21 will always align with the apertures 24, an arcuate slot 70 is cut into the planar plate 11 and a lug 71 is mounted on the strap 14 or the strap 15. The curvature of arcuate slot 70 is such that the lug 71 always runs in the slot 70 15 when the pin 21 is released from an aperture by manual movement of the extension 66 and the table is raised or lowered. A corresponding arcuate slot and lug arrangement may be included in the embodiment of Figures 1, 2 and 3.

20 Another optional feature of the embodiment of Figures 6 to 9, which could also be included in the embodiment of Figures 1 to 3, is the provision of a reinforcing cross member 75 which connects the upper straps 14 of Figures 7 and 9. Conveniently, the 25 cross member 75 is of tubular construction.

As shown in Figure 9, the bracket and planar plate assembly on the side of the table 12 remote from the illustrated and described adjustment assembly of

Figures 6 to 8 does not require the presence of the apertures 24 and the locating pin assembly. However, if desired, a locating pin assembly can be provided on each side of the table 12. An instance where a
5 locating pin arrangement on each side of a support table is desirable is when the table supports, or is adapted to support, a particularly heavy object.

It will be clear to mechanical engineers that although specific embodiments of the present
10 invention have been illustrated and described above, variations and modifications to the illustrated embodiment may be effected without departing from the present inventive concept.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:-

1. An adjustment assembly for use with a horizontal platform, said assembly comprising
 - (a) a bracket adapted to be mounted underneath the platform, said bracket having a planar side arm which extends vertically below the platform;
 - (b) a planar plate adapted to be fixedly mounted substantially coplanar with the bracket side arm;
 - (c) a pair of rigid, generally elongate connecting straps, each connecting strap being pivotally connected at or near one end thereof to the bracket side arm and being pivotally connected at or near the other end thereof to the planar plate, the elongate directions of the connecting straps being parallel;
 - (d) a pin support arrangement connected to the assembly, the pin support arrangement including a pin which (i) is adapted to be inserted within one of a series of apertures in the planar plate when the platform is locked in a selected location and (ii) is adapted to be retracted from within said one aperture when the platform is to be moved to a different location; and
 - (e) means to move said pin from its position inserted into said one aperture to its retracted position.

2. An assembly as defined in claim 1, including a tension spring extending between one of said straps and said planar plate, to provide at least partial support for said platform when said pin is in its retracted position.
3. An assembly as defined in claim 1 or claim 2, including (i) an arcuate slot formed in said planar plate and (ii) a lug mounted on one of said straps and adapted to run in said arcuate slot when said pin is in its retracted position and said platform is raised or lowered.
4. An assembly as defined in any preceding claim, in which said pin support arrangement comprises:
 - (a) a pin support bar having said pin mounted near one end thereof and having an extension at the other end thereof, said extension providing said means to move said pin;
 - (b) a generally U-shaped member mounted on said side arm, said U-shaped member having a pair of side arms, between which said pin support bar is located;
 - (c) a pivot axle extending through said side arms of said U-shaped member and through said pin support bar; and

(d) spring means connecting said pin support bar to said U-shaped member, for biasing said pin support bar into a position in which said pin is inserted into one of said apertures.

5. An assembly as defined in any one of claims 1, 2 and 3, in which said pin support arrangement comprises:

(a) a pin support body having a channel within which said pin is located and within which said pin is moveable;

(b) a cable connecting said pin to one end of a lever which is mounted on an axle for rotational movement thereabout; the other end of said lever providing said means to move said pin; and

(c) spring means mounted within said pin support body, for biasing said pin into a position in which said pin is inserted into one of said apertures.

6. An adjustment assembly for use with a horizontal platform, substantially as hereinbefore described with reference to the accompanying drawings.

7. A height-adjustable platform having two side edges, at least one of the side edges being provided with an adjustment assembly as defined in any preceding claim.

DATED this second day of September 1988
MARCO ENGINEERING PTY LTD

by its Patent Attorneys
DAVIES & COLLISON

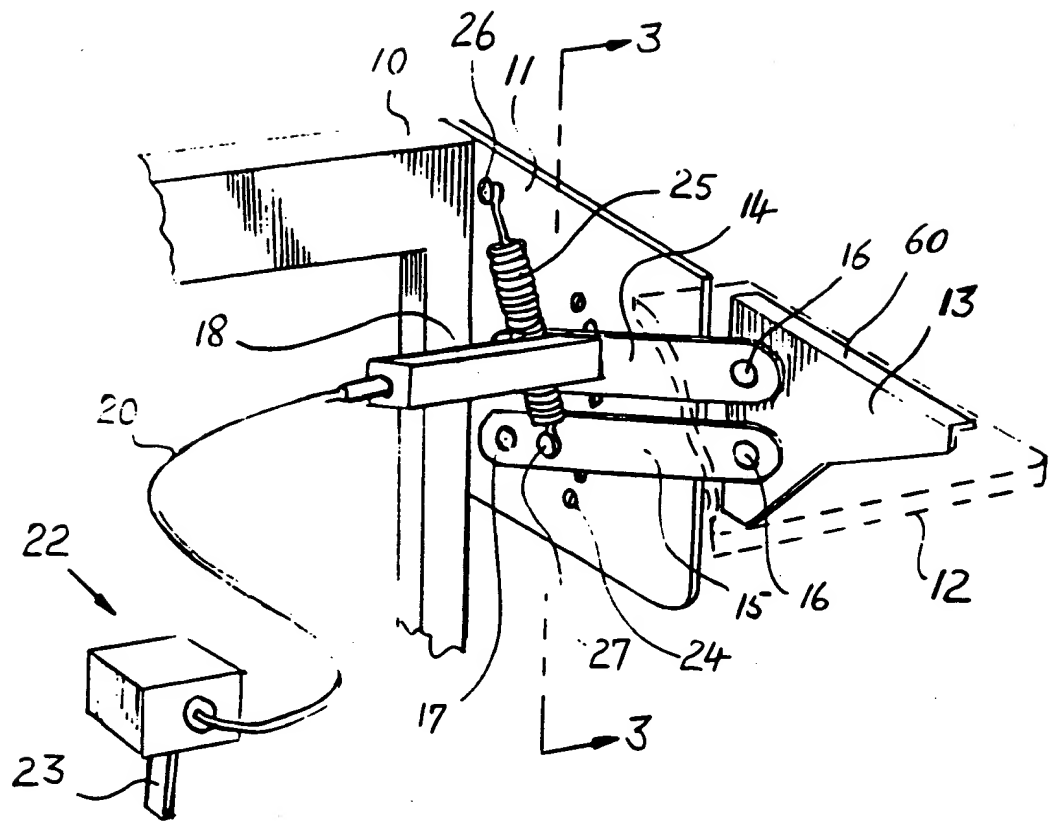


FIG. 1.

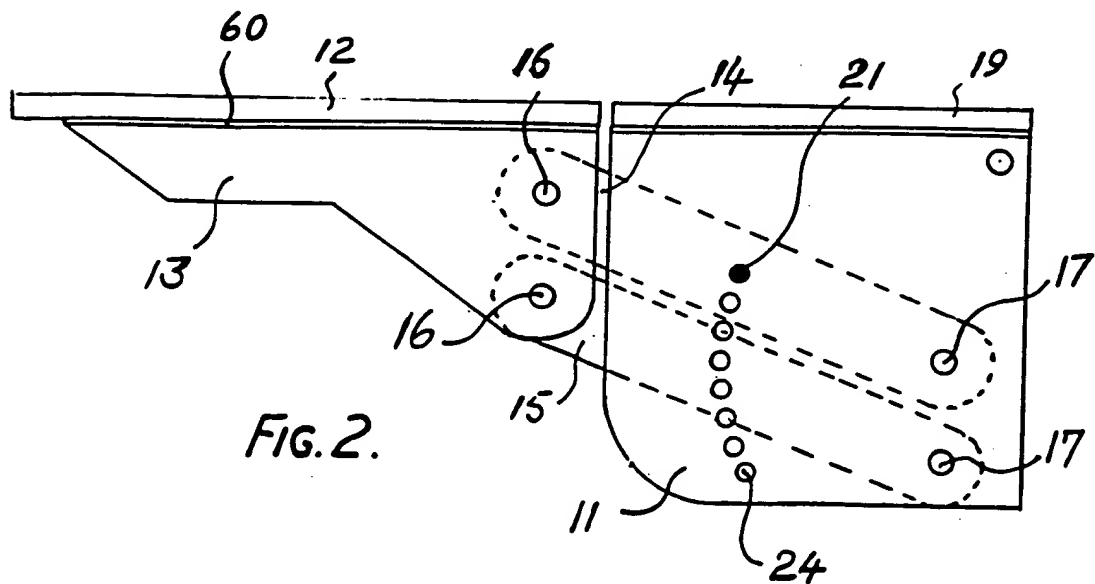
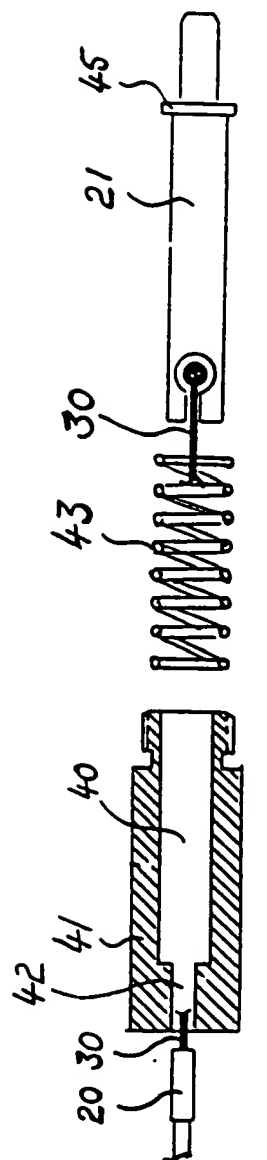
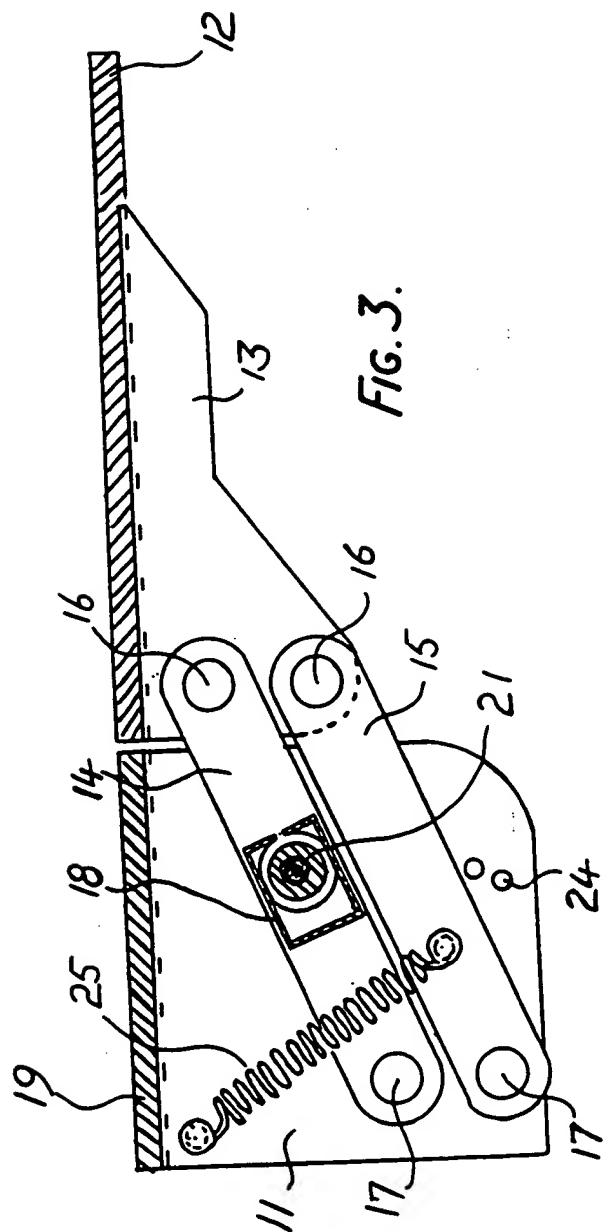


FIG. 2.



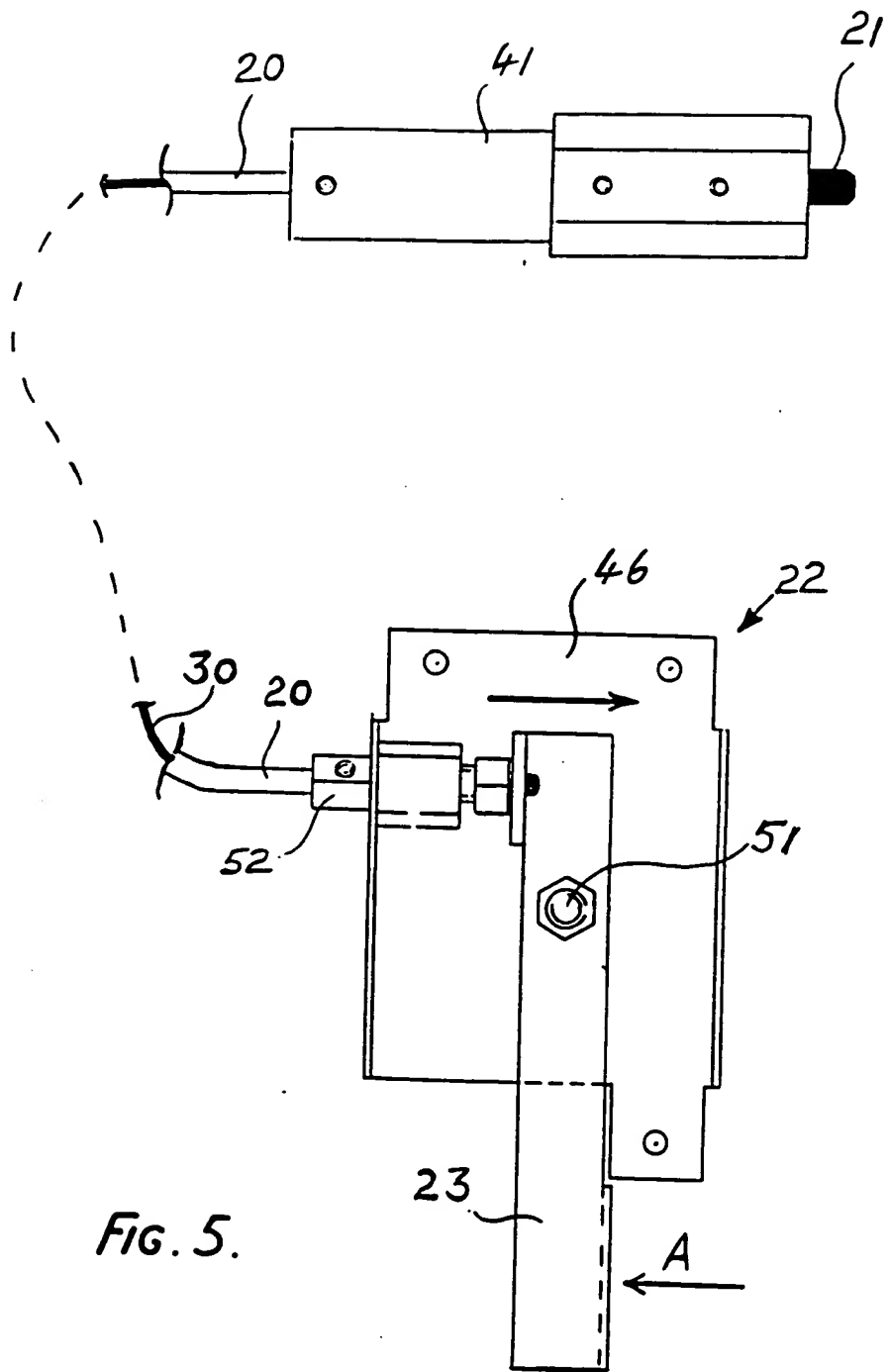


Fig. 5.

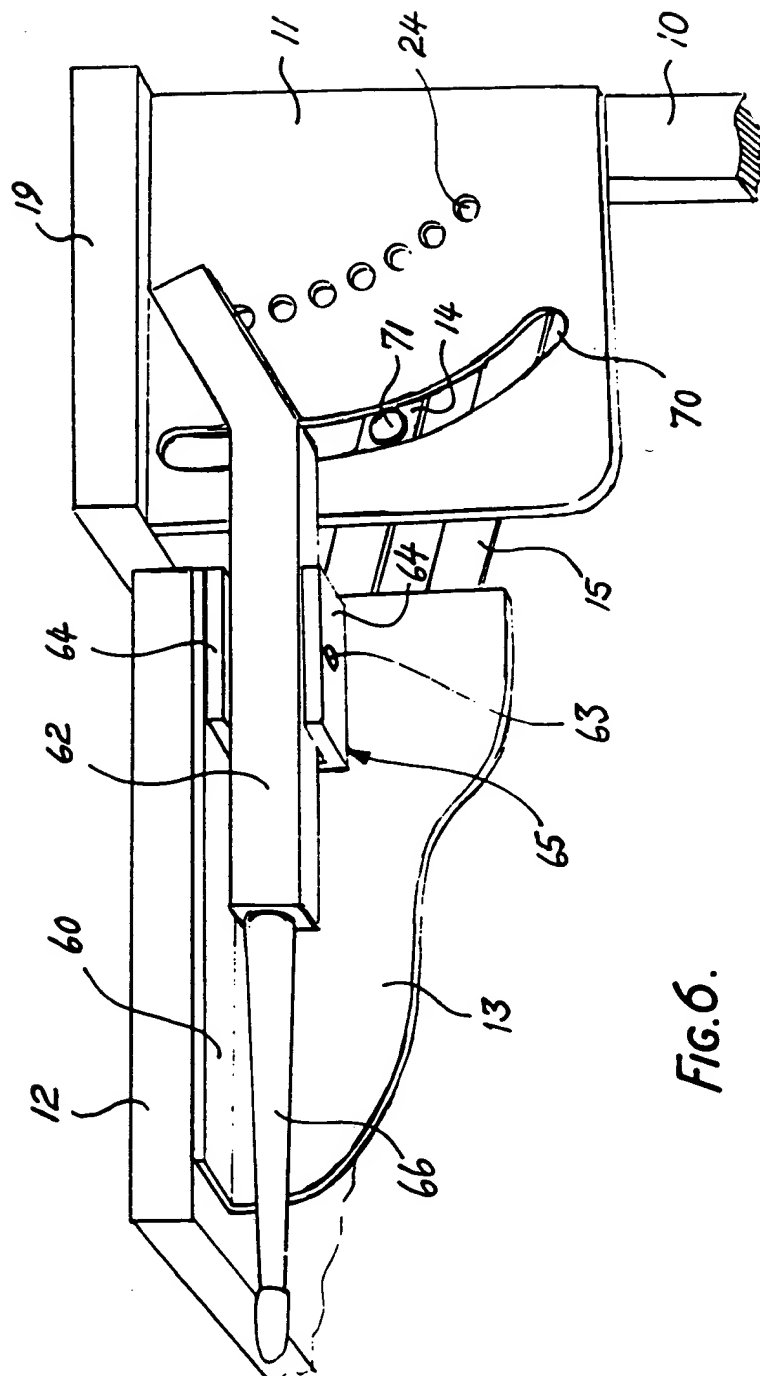


FIG. 6.

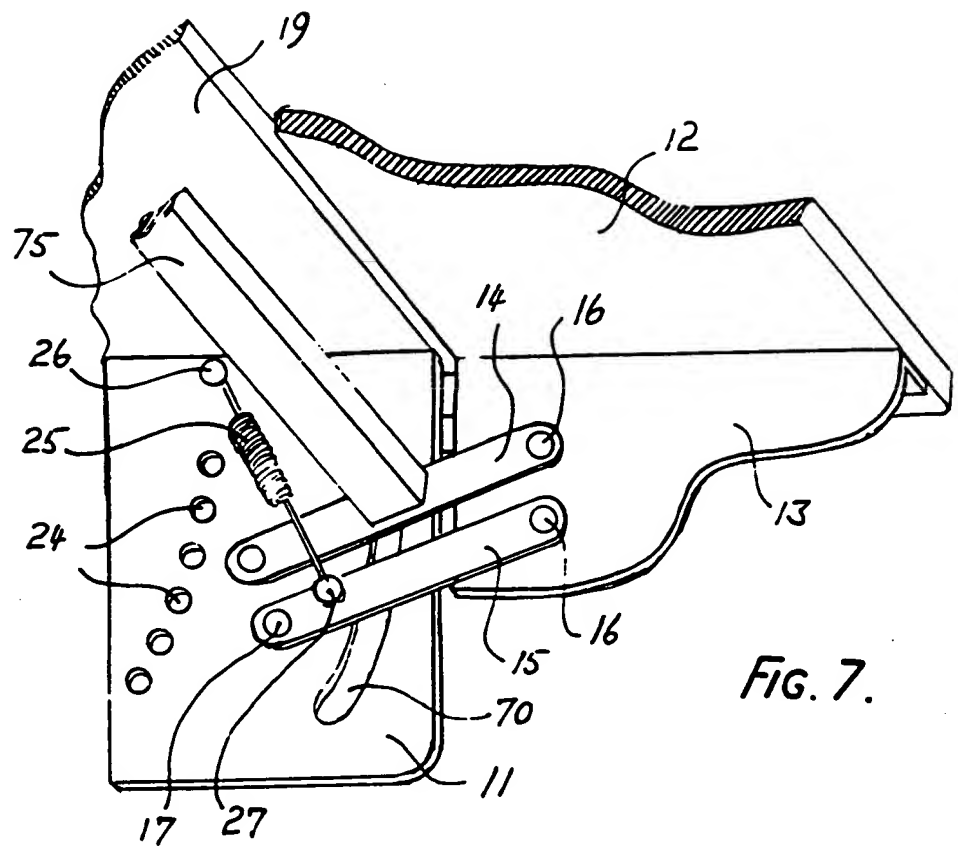


FIG. 7.

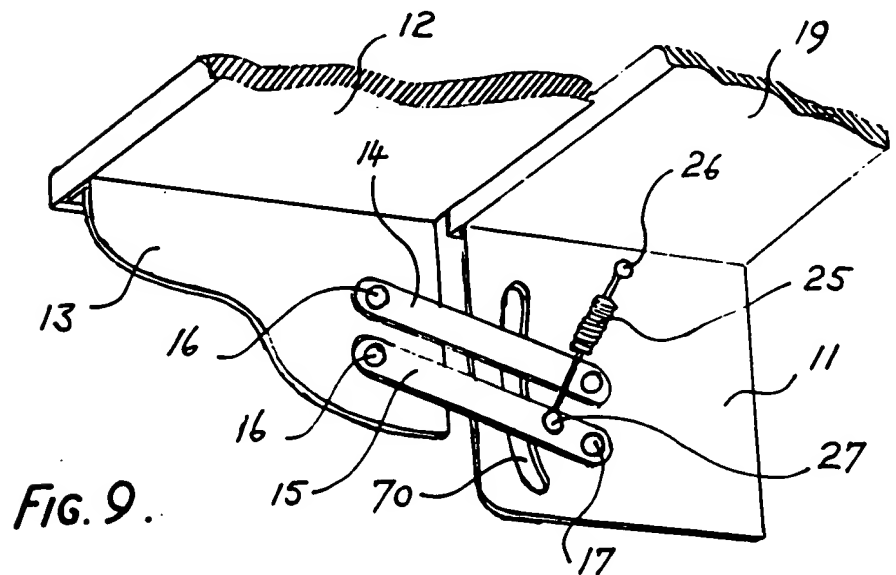


FIG. 9.

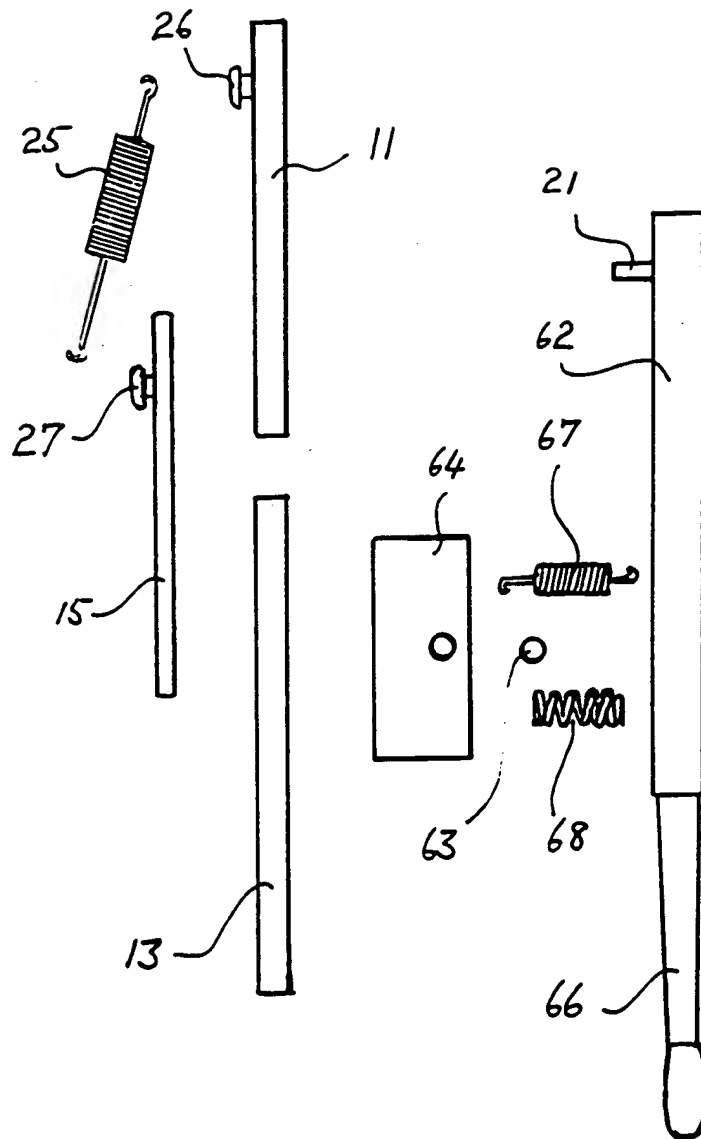


FIG. 8.